

Amendments to the Claims

and

Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claims 52-55 are canceled without prejudice.

1. (previously presented) A display apparatus, comprising: a plurality of pixel electrodes arranged in a matrix; switching elements connected thereto; scanning electrodes; video signal electrodes; common electrodes; a counter electrode; a display medium interposed between the pixel electrodes and the counter electrode; and storage capacitance formed between the pixel electrodes and the common electrodes,

wherein, in a case where a scanning electrode – pixel electrode capacitance between the pixel electrodes and the scanning electrodes is represented by C_{gd} , a common electrode – pixel electrode capacitance between the pixel electrodes and the common electrodes is represented by C_{st} , and a total capacitance connected electrically to the pixel electrodes is represented by C_{tot} ,

α_{gd} and α_{st} represented by

$$\alpha_{gd} = C_{gd}/C_{tot}, \quad \alpha_{st} = C_{st}/C_{tot} \quad (\text{Formula 1})$$

are set to be different values between a portion close to feeding ends in a screen and a portion away therefrom, and

an area of overlapping portions between the scanning electrodes and the pixel electrodes, and an area of overlapping portions between the common electrodes and the pixel electrodes are set to be larger in a screen center portion farthest from the feeding ends than in a screen end portion closest to the feeding ends, so that α_{gd} and α_{st} are both larger in the screen center portion farthest from the feeding ends than in the screen end portion closest to the feeding ends.

2. (original) A display apparatus according to claim 1, comprising a video signal driving circuit for applying two kinds of video signals having different polarities to video signal electrodes in accordance with a display period.

3. (original) A display apparatus according to claim 2, comprising a common electrode potential control circuit for applying a voltage signal to a plurality of common electrodes and a scanning signal driving circuit for applying a voltage signal to a plurality of scanning electrodes, the common electrode potential control circuit has output potential levels of at least two values, and the scanning signal driving circuit has output potential levels of at least two values.

4. (previously presented) A display apparatus, comprising:
 a plurality of pixel electrodes arranged in a matrix;
 switching elements connected thereto;
 scanning electrodes;
 video signal electrodes;
 common electrodes;
 a counter electrode;
 a display medium interposed between the pixel electrodes and the counter electrode;
 storage capacitance formed between the pixel electrodes and the common electrodes;
 a video signal driving circuit for applying two kinds of video signals having different polarities to video signal electrodes in accordance with a display period; and
 a common electrode potential control circuit for applying a voltage signal to a plurality of common electrodes and a scanning signal driving circuit for applying a voltage signal to a plurality of scanning electrodes, the common electrode potential control circuit has output potential levels of at least two values, and the scanning signal driving circuit has output potential levels of at least two values,

wherein, in a case where a scanning electrode – pixel electrode capacitance between the pixel electrodes and the scanning electrodes is represented by C_{gd} , a common electrode – pixel electrode capacitance between the pixel electrodes and the common electrodes is represented by C_{st} , and a total capacitance connected electrically to the pixel electrodes is represented by C_{tot} ,
 α_{gd} and α_{st} represented by

$$\alpha_{gd} = C_{gd}/C_{tot}, \quad \alpha_{st} = C_{st}/C_{tot} \quad (\text{Formula 1})$$

are set to be different values between a portion close to feeding ends in a screen and a portion away therefrom,

a potential of a scanning electrode becomes a first potential level V_{gon} when the scanning electrode is selected and becomes substantially a second potential level V_{goff} during a retention period in which the scanning electrode is not selected,

a potential of a common electrode that is a connection destination of storage capacitance connected to pixel electrodes of a plurality of pixels belonging to the scanning electrode becomes a first potential level $V_c(+)$ in a case where a polarity of a video signal is positive and a second potential level $V_c(-)$ in a case where the polarity of the video signal is negative, when the scanning electrode is selected, and

in a case where a difference between the first potential level $V_c(+)$ of the common electrode and a potential during a subsequent retention period is represented by $\Delta V_c(+)$, and a difference between the second potential level $V_c(-)$ of the common electrode and a potential during a subsequent retention period is represented by $\Delta V_c(-)$,

γ represented by

$$\gamma = \alpha_{st} V_{cp} / 2 \quad (\text{Formula 2}) \quad (\text{where } V_{cp} = \Delta V_c(+) - \Delta V_c(-))$$

is set to be smaller in the portion away from the feeding ends in the screen, compared with the portion close thereto.

5. (original) A display apparatus according to claim 4, wherein, assuming that a value of γ in the portion close to the feeding ends in the screen is $\gamma(O)$, a value of γ in the portion away from the feeding ends in the screen is $\gamma(E)$, and a value of γ in a portion in a middle therebetween in terms of a distance is $\gamma(M)$, $\gamma(M)$ is smaller than $[\gamma(O) + \gamma(E)]/2$.

6. (original) A display apparatus according to claim 4, wherein V_{cp} takes a negative value.

7. (previously presented) A display apparatus, comprising:
 a plurality of pixel electrodes arranged in a matrix;
 switching elements connected thereto;
 scanning electrodes;
 video signal electrodes;
 common electrodes;
 a counter electrode;
 a display medium interposed between the pixel electrodes and the counter electrode;
 storage capacitance formed between the pixel electrodes and the common electrodes;
 a video signal driving circuit for applying two kinds of video signals having different polarities to video signal electrodes in accordance with a display period; and

a common electrode potential control circuit for applying a voltage signal to a plurality of common electrodes and a scanning signal driving circuit for applying a voltage signal to a plurality of scanning electrodes, the common electrode potential control circuit has output potential levels of at least two values, and the scanning signal driving circuit has output potential levels of at least two values,

wherein, in a case where a scanning electrode – pixel electrode capacitance between the pixel electrodes and the scanning electrodes is represented by C_{gd} , a common electrode – pixel electrode capacitance between the pixel electrodes and the common electrodes is represented by C_{st} , and a total capacitance connected electrically to the pixel electrodes is represented by C_{tot} ,
 α_{gd} and α_{st} represented by

$$\alpha_{gd} = C_{gd}/C_{tot}, \quad \alpha_{st} = C_{st}/C_{tot} \quad (\text{Formula 1})$$

are set to be different values between a portion close to feeding ends in a screen and a portion away therefrom,

a potential of a scanning electrode becomes a first potential level V_{gon} when the scanning electrode is selected and becomes substantially a second potential level V_{goff} during a retention period in which the scanning electrode is not selected,

a potential of a common electrode that is a connection destination of storage capacitance connected to pixel electrodes of a plurality of pixels belonging to the scanning electrode becomes a first potential level $V_c(+)$ in a case where a polarity of a video signal is positive and a second potential level $V_c(-)$ in a case where the polarity of the video signal is negative, when the scanning electrode is selected, and

in a case where a difference between the first potential level $V_c(+)$ of the common electrode and a potential during a subsequent retention period is represented by $\Delta V_c(+)$, and a difference between the second potential level $V_c(-)$ of the common electrode and a potential during a subsequent retention period is represented by $\Delta V_c(-)$,

β represented by

$$\beta = \alpha_{gd} + \alpha_{st} (\Delta V_{cc} / \Delta V_{gon}) \quad (\text{Formula 4})$$

$$(\text{where } \Delta V_{gon} = V_{gon} - V_{goff}, \Delta V_{cc} = [\Delta V_c(+) + \Delta V_c(-)]/2 \quad (\text{Formula 5}))$$

is set to be larger in the portion away from the feeding ends in the screen, compared with the portion close thereto.

8. (original) A display apparatus according to claim 7, wherein, assuming that a value of β in the portion close to the feeding ends in the screen is $\beta(O)$, a value of β in the portion away from the feeding ends in the screen is $\beta(E)$, and a value of β in a portion in a middle therebetween in terms of a distance is $\beta(M)$, $\beta(M)$ is larger than $[\beta(O) + \beta(E)]/2$.

9. (original) A display apparatus according to claim 7, wherein ΔV_{cc} is negative.

10. (previously presented) A display apparatus, comprising:
a plurality of pixel electrodes arranged in a matrix;
switching elements connected thereto;
scanning electrodes;
video signal electrodes;
common electrodes;

a counter electrode;
 a display medium interposed between the pixel electrodes and the counter electrode;
 storage capacitance formed between the pixel electrodes and the common electrodes;
 a video signal driving circuit for applying two kinds of video signals having different polarities to video signal electrodes in accordance with a display period; and

a common electrode potential control circuit for applying a voltage signal to a plurality of common electrodes and a scanning signal driving circuit for applying a voltage signal to a plurality of scanning electrodes, the common electrode potential control circuit has output potential levels of at least two values, and the scanning signal driving circuit has output potential levels of at least two values,

wherein, in a case where a scanning electrode – pixel electrode capacitance between the pixel electrodes and the scanning electrodes is represented by C_{gd} , a common electrode – pixel electrode capacitance between the pixel electrodes and the common electrodes is represented by C_{st} , and a total capacitance connected electrically to the pixel electrodes is represented by C_{tot} ,

α_{gd} and α_{st} represented by

$$\alpha_{gd} = C_{gd}/C_{tot}, \quad \alpha_{st} = C_{st}/C_{tot} \quad (\text{Formula 1})$$

are set to be different values between a portion close to feeding ends in a screen and a portion away therefrom,

a potential of a scanning electrode becomes a first potential level V_{gon} when the scanning electrode is selected and becomes substantially a second potential level V_{goff} during a retention period in which the scanning electrode is not selected,

a potential of a common electrode that is a connection destination of storage capacitance connected to pixel electrodes of a plurality of pixels belonging to the scanning electrode becomes a first potential level $V_c(+)$ in a case where a polarity of a video signal is positive and a second potential level $V_c(-)$ in a case where the polarity of the video signal is negative, when the scanning electrode is selected,

in a case where a difference between the first potential level $V_c(+)$ of the common electrode and a potential during a subsequent retention period is represented by $\Delta V_c(+)$, and a

difference between the second potential level $V_c(-)$ of the common electrode and a potential during a subsequent retention period is represented by $\Delta V_c(-)$,

γ represented by

$$\gamma = \alpha_{st} V_{cp} / 2 \quad (\text{Formula 2}) \quad (\text{where } V_{cp} = \Delta V_c(+) - \Delta V_c(-)) \quad (\text{Formula 3})$$

is set to be smaller in the portion away from the feeding ends in the screen, compared with the portion close thereto, and

β represented by

$$\beta = \alpha_{gd} + \alpha_{st} (\Delta V_{cc} / \Delta V_{gon}) \quad (\text{Formula 4})$$

(where $\Delta V_{gon} = V_{gon} - V_{goff}$, $\Delta V_{cc} = [\Delta V_c(+) + \Delta V_c(-)]/2$ (Formula 5))

is set to be larger in the portion away from the feeding ends in the screen, compared with the portion close thereto.

11-42. (canceled)

43. (previously presented) A display apparatus according to claim 1, wherein the display medium is liquid crystal.

44. (original) A display apparatus according to claim 43, which has a configuration forming a parallel plate capacitance in which a liquid crystal layer is interposed between the pixel electrodes and the counter electrode.

45. (canceled)

46. (canceled)

47. (previously presented) A display apparatus according to claim 1, wherein at least one of capacitances forming C_{tot} includes a capacitance formed by two conductive layers or semiconductor layers sandwiching an insulating layer therebetween, and an overlapping area of the two conductive layers or semiconductor layers is made different between the portion close to the feeding ends in the screen and the portion away therefrom, whereby α_{st} or α_{tc} , and α_{gd} are allowed to have different values between the portion close to the feeding ends in the screen and the portion away therefrom.

48. (previously presented) A method for driving the display apparatus of claim 1, wherein after a potential is written to the pixel electrodes via the switching elements, a voltage is superimposed via C_{st} and has a value different between the portion close to the feeding ends in the screen and the portion away therefrom.

49. (original) A method for driving a display apparatus according to claim 48, wherein, when a scanning electrode is selected, a first potential level $V_c(+)$ is applied to common electrodes that are connection destinations of storage capacitance connected to pixel electrodes of a plurality of pixels belonging to the scanning electrode in a case where a polarity of a video signal is positive, and a second potential level $V_c(-)$ is applied thereto in a case where a polarity of the video signal is negative.

50-57. (canceled)

58. (previously presented) A display element, comprising: a plurality of pixel electrodes arranged in a matrix; switching elements connected thereto; scanning electrodes; video signal electrodes; common electrodes; a counter electrode; a display medium interposed between the pixel electrodes and the counter electrode; and storage capacitance formed between the pixel electrodes and the common electrodes,

wherein, in a case where a scanning electrode – pixel electrode capacitance between the pixel electrodes and the scanning electrodes is represented by C_{gd} , a common electrode – pixel electrode capacitance between the pixel electrodes and the common electrodes is represented by C_{st} , and a total capacitance connected electrically to the pixel electrodes is represented by C_{tot} ,

α_{gd} and α_{st} represented by

$$\alpha_{gd} = C_{gd}/C_{tot}, \quad \alpha_{st} = C_{st}/C_{tot} \quad (\text{Formula 1})$$

are set to be different values between a portion close to feeding ends in a screen and a portion away therefrom, and

an area of overlapping portions between the scanning electrodes and the pixel electrodes, and an area of overlapping portions between the common electrodes and the pixel electrodes are set to be larger in a screen center portion farthest from the feeding ends than in a screen end portion closest to the feeding ends, so that α_{gd} and α_{st} are both larger in the screen center portion farthest from the feeding ends than in the screen end portion closest to the feeding ends.

59-63. (canceled)

64. (previously presented) A display apparatus according to claim 4, wherein a common electrode potential is different between a retention period after the pixel electrodes are charged with a positive video signal and a retention period after the pixel electrodes are charged with a negative video signal.

65. (previously presented) A display apparatus according to claim 3, wherein the scanning signal driving circuit conducts writing to a plurality of lines simultaneously.

66. (original) A display apparatus according to claim 65, wherein the display medium is liquid crystal of an OCB mode.

67. (previously presented) A display apparatus according to claim 3, wherein the scanning signal driving circuit and the common electrode potential control circuit are formed on the same substrate as that of the switching elements.

68. (previously presented) A display apparatus according to claim 1, wherein the display medium is composed of a medium whose optical state is controlled with a current and auxiliary switching elements.

69. (original) A display apparatus according to claim 68, wherein the medium whose optical state is controlled with a current is an organic electroluminescence medium.

70-79. (canceled)